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two parts is hardly justifiable, where, as this plant shows, intergradations exist."

JUEL,²² studying *R. Bischoffii*, found that the cells of the median dorsal region of the thallus are arranged according to the so-called *Euriccia* pattern, while the wings have the *Ricciella* pattern; the smallest air chambers being bounded by 6 cells and the largest by 15. He attributes the presence of the 4-sided air spaces of the middle region to the fact that the ventral cells grow a little more rapidly than do the dorsal cells. The increasingly larger air spaces of the wings are due to very unequal growth of the cells. This work is another example of how artificial and arbitrary distinctions frequently break down when the problem is attacked by an observer trained in morphological methods.—W. J. G. LAND.

Traumatotaxy and chemotaxy.—RITTER²³ has published an article on traumatotaxy and chemotaxy of the nucleus. It adds little that is new and is not markedly critical. In the region of the wound the nuclei in the intact cells move toward the wound and enlarge somewhat. Light and gravity do not modify the reaction, while absence of oxygen and anaesthetics entirely stop it. After five or six days the nuclei recover their normal position; this agrees with the duration of the respiratory acceleration due to wounding. There are a number of parallels between the traumatotactic and chemotactic responses, but the author concludes that the chemotactic effect of endosmosing solutes from the dead cells cannot account for any considerable part of the traumatotactic response. The wound response is much more rapid than the response to chemicals; wounds also produce protoplasmic movements, while the chemicals do not. RITTER believes that in the wound response the nuclei are passively transported by the moving protoplasm; on this point his evidence is certainly not convincing. The effective chemotactic substances were salts, bases, organic acids, and carbohydrates. Inorganic acids and many organic substances were not effective.—WILLIAM CROCKER.

Hybrids at Kew.—A list²⁴ of all hybrids produced in the Royal Botanic Gardens at Kew, England, will surprise many by its shortness, considering the length of time during which Kew has been one of the great botanical clearing houses of the world, and the obvious advantages it has had on this account for the production of hybrids. The earliest hybrid produced at Kew was the result of a cross between *Rhododendron Griffithianum* and *R. Hookeri*, made in 1874; and in the 36 years from that time, until this list was published, 49 hybrids have been produced, and 12 failures are reported.

²² JUEL, O., Ueber den anatomischen Bau von *Riccia Bischoffii* Hub. Svensk. Bot. Tidsk. 4: 160-166. pl. 7. figs. 5. 1910.

²³ RITTER, GASTON, Ueber Traumatotaxis und Chemotaxis des Zellkernes. Zeitschr. Bot. 3: 1-42. 1911.

²⁴ Hybrids raised at Kew. Kew Bull. 1910: 321-328.